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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|-------------|----------------------|---------------------------|------------------------|
| 10/771,263 | 02/04/2004 | Takayuki Shimada | 829-620 | 1391 |
| 23117 7590 09/19/2007 NIXON & VANDERHYE, PC 901 NORTH GLEBE ROAD, 11TH FLOOR ARLINGTON, VA 22203 | | | EXAMINER CHIEN, LUCY P | |
| | | | ART UNIT 2871 | PAPER NUMBER |
| | | | MAIL DATE 09/19/2007 | DELIVERY MODE PAPER |

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/771,263

Applicant(s)

SHIMADA ET AL.

Examiner

Lucy P. Chien

Art Unit

2871

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 July 2007.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-24 and 34-60 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-24 and 34-60 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 04 February 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 7/6/07, 7/9/07.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Response to Arguments

Applicant's arguments with respect to claim 1-24,34-51 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-5,12-17,21,23,24,34-39,42-44,46-48,51-53,55-57 are rejected under 35

U.S.C. 103(a) as being unpatentable over Wakai et al (US 5229644) and of Shimada et al (US 5822027) in view of Misawa et al (US 5341012).

Regarding Claim 1-5,14-17,21,34,35,43,44,52,53,

Wakai et al discloses and shows in Figs. 3, a liquid crystal display device, gate lines (113), source lines (114), switching elements (TFT's) each arranged near a crossing of each gate line and each source line, a gate electrode (107) of each switching element being connected to the gate line (113), a source electrode (106) of the switching element being connected to the source line (114), a drain electrode (107) of the switching element being connected to a pixel electrode (110) for applying voltage to a liquid crystal layer, wherein an photosensitive acrylic resin insulating layer

Art Unit: 2871

cured(108) (Column 6, rows 25-37) so as to cover the drain electrode to insulate from other electrodes (column 4, rows 60-67), the gate line, and the source line; the pixel electrode is on the interlayer insulating film, the pixel electrode overlaps the source line.

Wakai et al does not disclose a photosensitive resin having a dielectric constant of 3.4 to 3.8, the insulating film is 1.5 μm or more, and a spectral transmittance of the transparent interlayer organic insulating film has a lower transmittance for blue light than that for green and red light.

[Examiner is including reference of Shimada et al only to show the scientific fact that the acrylic resin used to make the insulator in Wakai et al has a dielectric constant property of 3.4. (therefore the date of the reference is irrelevant)]

Misawa et al discloses (column 7, rows 42-46) the insulating film (Fig. 3A (85)) is 1.5 μm or more to insure a wet-proof layer. It is known in the art that when the thickness of the insulating layer increases transmittance lowers and since, among the three primary colors blue has the lowest transmittance and then the green and then the red the limitation of, wherein a spectral transmittance of the transparent interlayer organic insulating film has a lower transmittance for blue light than that for green and red light." is met.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Wakai et al to include Misawa et al's insulating film that is 1.5 μm or more to insure a wet-proof layer.

Art Unit: 2871

Regarding Claim 12,23

The limitation such as, "insulating film suppresses degradation by resist removing solution used to form the pixel electrode" is considered as product-by-process claim. Even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same ~ or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process." In re Thorpe, 777F.2d 695,698, 227 USPQ 964, 966 (Fed. Cir. 1985); see also MPEP 2113).

Regarding Claim 13,24,

In addition to Wakai et al and Misawa et al as disclosed above, since the transparent insulating layer disclosed by Wakai et al is made of a same material and having the similar dielectric constant as the claimed transparent insulating layer, it would have at least been obvious to one of ordinary skill in the art at the time of the invention was made that the transparent insulating layer of Wakai et al has a light transmittance of 90% or more for light within an entire wavelength range of about 400nm to about 800 nm.

Regarding Claim 36,

In addition to Wakai et al and Misawa et al as disclosed above, Wakai et al discloses (Column 7, row 54) the pixel aperture ratio is at least about 65%.

Art Unit: 2871

Regarding Claim 37,46,55

In addition to Wakai et al and Misawa et al as disclosed above, Wakai et al discloses (Column 2, row 30-45) wherein the pixel electrode overlaps one of the data and gate lines by about 1 μm or more.

Regarding Claim 38,39,47,48,56,57

In addition to Wakai et al and Misawa et al as disclosed above, Wakai et al discloses (Fig. 3) a semiconductor layer (104) on top of the gate insulating layer (103) which is of amorphous silicon.

Regarding Claim 42,51,

In addition to Wakai et al and Misawa et al as disclosed above, Wakai et al discloses (Fig. 3) the thickness of the pixel electrodes is no greater than 1500Å. (Column 5, rows 10-11).

Claims 6-11,18-20,22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wakai et al (US 5229644) and of Shimada et al (US 5822027) and of Misawa et al (US 5341012) in view of Takatoh et al (US 5128788).

Regarding Claim 6-9,11,18-20,22

Wakai et al and Misawa et al disclose everything as disclosed above.

Wakai et al and Misawa et al do not disclose the use of a positive type photosensitive resin including a copolymer glycidyl.

Art Unit: 2871

Takatoh et al (Column 4, rows 5-20) discloses the use of a positive type photosensitive resin including a copolymer glycidyl added for a thermally reactive function which has a reactive peak at a wavelength of 365 nm.

It would have been obvious to one of ordinary skill in the art to modify Wakai et al and Misawa et al to include Takatoh positive type photosensitive resin including a copolymer glycidyl motivated by the desire to add a thermally reactive function (Column 4, rows 5-20).

Regarding Claim 10,

In addition to Wakai et al, Misawa et al, and Takatoh et al as disclosed above, Wakai et al discloses the transparent interlayer organic insulating film is cured (Column 6, rows 25-37)

Claims 40,41,49,50,58,59 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wakai et al (US 5229644) and of Shimada et al (US 5822027) and of Misawa et al (US 5341012) in view of Shoji et al (US 5051800).

Wakai et al and Misawa et al disclose everything as disclosed above.

Wakai et al and Misawa et al do not disclose a contact layer made of amorphous silicon over the semiconducting layer.

Shoji et al discloses (Fig. 8) a contact layer made of amorphous silicon (17a,17b) over the semiconducting layer (15).

Art Unit: 2871

It would have been obvious to one of ordinary skill in the art to modify Wakai et al and Misawa et al to include Shoji et al's contact layer made of amorphous silicon (17a,17b) over the semiconducting layer (15) motivated by the desire to provide that restricts deteriorations of the display quality. (Abstract).

Claims 45,54,60 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wakai et al (US 5229644) and of Shimada et al (US 5822027) and of Misawa et al (US 5341012) in view of Mori et al (US 5359441).

Wakai et al and Misawa et al disclose everything as disclosed above.

Wakai et al and Misawa et al do not disclose the pixel aperture is at least about 80%.

Mori et al disclose the pixel aperture is at least about 80% to improve the efficiency of the utilized light.

It would have been obvious to one of ordinary skill in the art to modify Wakai et al and Misawa et al to include Mori et al's pixel aperture is at least about 80% to improve the efficiency of the utilized light (Column 6, rows 1-10).

Art Unit: 2871


Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lucy P. Chien whose telephone number is 571-272-8579. The examiner can normally be reached on M-F 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Nelms can be reached on (571)272-1787. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Lucy P Chien
Examiner
Art Unit 2871


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